

A STUDY ON FACTORS AFFECTING QUALITY DETERIORATION IN HOUSING
CONSTRUCTION INDUSTRY IN KLANG VALLEY

(A CASE STUDY FOR HOUSING CONSTRUCTION
PROJECTS WITHIN KLANG VALLEY)

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ABSTRACT

The purpose of this paper is to investigate the factors that affecting the quality deterioration in housing construction industry in Malaysia. A reliable survey instrument has been used for gathering the data's from the construction project workers such as Project Manager, Construction Manager, Engineer and Supervisor. Upon that, series of analysis has been conducted to identify and confirmed the factors affecting the quality deteriorations problem in construction industry. The results indicate that construction staff's training, the role of Managers with the top management commitment is the significant variables explaining variability of operational performance. Furthermore, a series of analysis on training factors shows the importance of necessary and suitable training which relates to quality of the products in construction industry. The study also shows that training factors was influenced by other related factors such as the manager in charge and the management commitment towards the works. As the study was within Klang Valley, the implicating factors show a general result. But in future, the studies could continue with a larger sample size. This study contributes to the important relevant factors and it's affects in development of quality control within the construction project activities. Although other investigation was carried out on other factors but this study is focusing to the actual construction project.

(Keyword: Quality Problem, Quality Deterioration in Housing Industry, Factors Affecting, Workers Training, Manager's Role, Management Commitment)

**SATU PENYELIDIKAN DALAM MENENTUSAHKAN FAKTOR-FAKTOR
PENYEBAB KEPADA KEMEROSOTAN KUALITI DALAM INDUSTRI PEMBINAAN
RUMAH DI MALAYSIA**

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JAN 2011

ABSTRAK

Tujuan kertas penyelidikan ini adalah untuk menyiasat faktor-faktor penyebab kemerosotan kualiti produk dalam industri pembinaan rumah di sekitar Malaysia umumnya tetapi Lembah Klang khususnya. Menurut kajian, punca kemerosotannya iaitu pemeriksaan awalan untuk kerja-kerja pembinaan yang berkait rapat dengan kekurangan dalam latihan. Satu instrumen boleh percaya telah digunakan dalam borang soal selidik untuk mengumpul maklumat/data daripada pekerja pembinaan seperti Pengurus Projek, Pengurus Pembinaan, Jurutera dan Penyelia Tapak. Dengan adanya maklumat seumpama ini, beberapa analisis telah dijalankan untuk mengenalpasti faktor-faktor penyebab kemerosotan kualiti dalam industri pembinaan. Keputusan daripada soal selidik pekerja-pekerja pembinaan menunjukkan latihan bersepadu perlu diutamakan dan dipraktikkan dengan bantuan pihak pengurus dan juga pihak majikan merupakan pembolehubah utama dan penting dalam prestasi operasi ini. Ia juga menunjukkan kepentingan dan kesesuaian analisis untuk latihan bersepadu yang berkait rapat dengan kualiti produk dalam industri pembinaan. Penyelidikan ini juga menunjukkan faktor latihan dipengaruhi oleh faktor lain seperti pengurus dan juga pihak majikan terhadap komitmen mereka ke atas kerja-kerja di tapak pembinaan. Penyelidikan ini merangkumi kawasan-kawasan sekitar Lembah Klang, maka keputusannya hanya menunjukkan kesan faktor secara umumnya. Tetapi pada masa akan datang, penyelidikan ini dapat diteruskan dengan jumlah sampel yang besar. Penyelidikan ini menyumbang secara pentingnya mempengaruhi faktor utama and kesannya dalam pembangunan kawalan kualiti di dalam aktiviti projek binaan. Walaupun penyelidikan yang berlainan telah di laksanakan untuk faktor yang berlainan namun penyelidikan ini lebih tertumpu kepada projek-projek pembinaan.

(Kata kunci: Masalah Kualiti, Kemerosotan Kualiti dalam Industri Perumahan, Faktor-Faktor Penyebab, Latihan Pekerja, Peranan Pengurus, Komitmen Majikan)

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LIST OF ABBREVIATIONS

%	percentage
α	Cronbach Alpha
&	and
/	or
Eg	Example
et al	et alii or et aliae also known as and others
KL	Kuala Lumpur
ISO	International Organization for Standardization
MRR 2	Middle Ring Road 2
NST	New Straits Times
Dr	Doctor of Philosophy
S.O.	Superintendent Officer
CIDB	Construction Industry Development Board
TUDM	Tentera Udara DiRaja Malaysia
CCT	The Consumer Claims Tribunal
THBC	The Tribunal for Homebuyer Claims
SPSS 18	Statistical Package the Social Sciences 18.0 for Windows
NO	number of
LAD	Liquidated Ascertain Damage
r	correlation value
MBAM	Master Builders Association Malaysia
OUM	Open University Malaysia

CHAPTER 1

INTRODUCTION

1.1 Background

Construction industry in Malaysia is barely known for building of houses, design of buildings, skyscrapers, roads, drains, dams, tunnels to most of us. The establishment of huge construction works in Malaysia have brought her to the eyes of the worlds. Look at the once tallest building in Malaysia which is the Petronas Twin Tower, with other icons such as the KL Tower, KL Pavilion with also fantastic houses from the bungalows up to the low cost apartment, from single trunk road to major network connector such as North –South Highway with other reputable highways everywhere through Malaysia's 9th Plan. This construction industry has become the main source of generating a huge cash flow in the country where it provides job scope to the people, proper infrastructure, acceptable standard of life and others.

But currently, the most important 'disease' which infecting the overall construction industry in Malaysia would be the monetary issues when the project could not earn sufficient income and this affecting the producer and the consumer. The construction industry is being viewed as one with poor quality emphasis

compared to other sector like the manufacturing and service sectors (Kubal 1994, Kanji and Wong 1998, Wong and Fung 1999). Down the road, if we analyze in detail, the monetary problem is actually cross link to quality issues. A lot of producers such as the developers, contractors, suppliers and others will encroach into quality field and start to manipulate the importance of the product quality which subjected to the deterioration of quality in the products. Construction industry is characterized by its non-standardization (Rowlinson and Walker 1995). A simple example would be the painting to the external houses should last at least 2 years according to the specification and warranty from manufactures. But what happen, the painting will start to flake and soon wash away within a year. Looking at this example, the paints quality was manipulated to suit the applicators need. I believe there were many people representing the producers know about it but why none of them able to tackle it and improvise it? Is it due to experience factor? Reluctant factor? Don't know factor? Don't want to know factor? All this factors would be affecting minimally towards the involved individuals but maximally to parties which is going to accept to the overall works at the end. Who supposed to be held responsible? Who should look into quality of the products detail? When we come to the details, there are too many questions arises but unfortunately all of them without answers.

So what is quality? Why quality is very important for a product? All of us always wanted a quality product which subject to the price we going to pay for that product without any hesitation. But most of us were cheated directly by the cosmetic quality

standard which fakes the actual nature of the product. What went wrong until the quality of the products have drop tremendously although there are the existence of Quality Control section to monitor such product? Who suppose to be blame? Who should be responsible?

1.2 Definition

Quality is defined as "the totality of features and characteristics of a product or service that bears on its ability to meet a stated or implied need" as stated in ISO 8402 [ISO, 1986]. It works as a tool in order to produce the most wanted product by that particular sector. As what all of us aware, the problems with quality have already established since the appreciation of the product was made known to the world. When we mentioned about quality to the product, in a look it definitely refers to the goodness and the expensiveness of products. So the ideas of quality are very important to any buyers of that product and it depends to an initiator or the seller of the product on how to determine and control it. In Malaysia, construction industry mainly the property industry, it is an important market where buyers are ready to invest large sum of money for it, with the hope the investment will be fruitful in future. All this could only be possible if the quality of that product could be sustained in proper manner.

1.3 Problems Statement

The rate of official complaint cases regarding the deterioration of quality to the product to the developers, newspaper, television, ministry have increased tremendously in Malaysia. The market is stunted and worried of this problem where no serious attention or alternative decision was taken by any of the relevant parties. The deifying and denying era to buyers or investors by any developers, local councils and even the ministries must be change totally with the attitude and serious action must concurrently to follow. The buyers' decision to step in to the problem and ready to make that change has created turbulence in the construction industry. The buyers drastic move was to boycott the developers products and as the result, the product will be laid down or reduction price tremendously. So, as the end financier and end user, they have all the right to determine the suitable and acceptable quality of the product.

Currently, the upcoming and most highlighted problems in Malaysian construction especially to the property industry would be the quality matter. The problems begin when the quality terms are not properly defined by the initiator and that their main intention would be pressing the developing party to follow the reasonable quality. So the main question would be what is the reasonable quality? Is the reasonable quality is determine by final end user or by the developer or by the architect of the project

or project manager and moreover is it going to be the project supervisor? Who will have the final say and who suppose to lead the role?

So the study of this project paper will refer to the problem occurs with when the initial supervision was related to lacking in training that causes for poor or failure in supervision to the product that leads to quality deterioration problem in construction industry. Why these problems happen? Does the project manager play the role well? Or is that occurs due to controllers' attitude problem? There are some series of devastating quality problems such as the roof collapse at the Sultan Mizan Stadium on 6 June 2009 (The Star) where the roof construction works was completed 2 months only, the water piping damages in PutraJaya government office on April 2007 (The Star), major cracks of the horizontal span on Middle Ring Road 2 (MRR 2) on August 2008 (The Star), the fungal attack to hospital equipments in Sultan Ismail Hospital in Johor Bahru on November 2008 (NST) and many more. Everyone involves in this projects are fully aware and persistent of the condition but this problem still exist.

What is quality? How to obtain a quality product? Who determine the quality standard? There were numerous question regarding quality would arise if a person could not understand the main idea and its objective. As stated in Business dictionary.com, quality determines the measurements of excellence or state of being free from defects, deficiencies and other variations. Other similar definitions explain the totality of features and characteristic of a product or service that bears its ability to satisfy stated or implied

needs. As claimed by, Hamzah et.al.2007, human causes the quality deterioration in construction industry.

Quality was initially introduced to the world by the first, Father of Quality, Dr W Edwards Deming followed by Dr Joseph M Juran and now the father of total quality control is Dr. Armand Val Feigenbaum. Initially, during the beginning of revolution industry, the quality idea was established for larger scale and expensive item which only the rich involved. But when things around changes and quality was set as a benchmarking options to make a selection then this would be an ultimate marks.

The graph below shows how the impact of cost influencing the required quality level. The zero default shows the costs was on the high side which means the cost required to obtain a zero default or 'super' quality. But the developer mind set will still look for minimizing the cost till achieve the "acceptable quality level" in which it contradicting the consumers mindset whom prepare to spent extra sum to obtain higher quality.

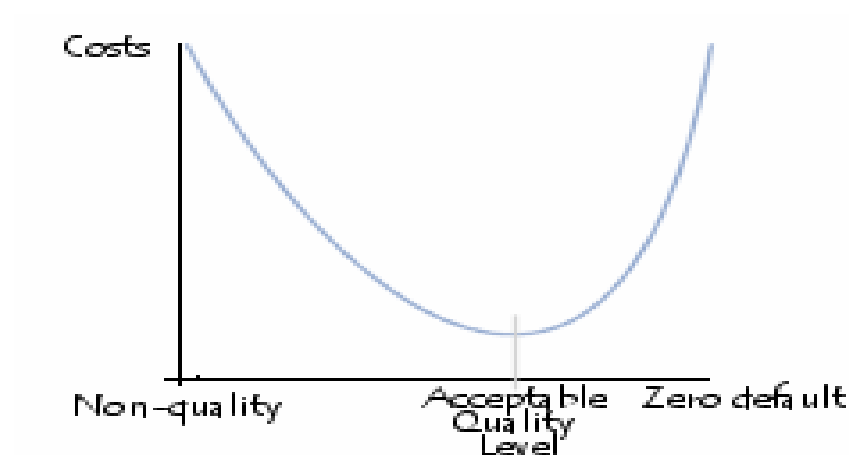


Figure 1.1: Cost - Quality Graph

(Source: www.tqmschool.com)

As a construction Project Manager, the researcher feels that they have a serious obligation on delivering quality products to the relevant consumer whom we have promised to do so during purchasing stage. But will it be possible without proper guidance and training to the relevant “agents” whom suppose to deliver quality products? This “agents” will play an important role on determining the establishment of quality in the industry. These agents are the supervisors, clerk of works, site agents and project executive whom suppose to work to uphold the quality standard of the products within their supervisions. They have to be the one whom the project managers rely on to make sure the projects are within the quality control standard as approved and agreed by the Superintendent Officer (S.O) which is the Architect or the Engineer of the projects. Juran and Deming (2003) emphasised that the achievement of quality requires supportive organisational structure with the active involvement of senior management as well as staff at all other levels.

1.4 Research Rational

Quality adherence will be more critical tomorrow. Without proper guidance and direction, the items are only a news or story to learn from the predecessor. As to what we observed and learn from previous incidents and experience, it is important that the quality awareness should be included in the workers mindset as what we face in construction daily such as the toolbox talk every morning just to remind us the necessity of safety in the industry. But in most cases, very least people will be aware of the quality awareness to the product and this some of them will be reluctant to inform their sub-ordinates on protecting and preserving the quality of the products.

Moreover, the rational of the research is very much linked to the demand of the product from construction industry. The importance of providing the sufficient knowledge about quality would lead to better product. The existence of serious and damaging cases of low quality product in construction industry have lead the ministry and government to set up tribunal court and consumer courts to help and assist the buyer or investors to re-gain their lifetime saving. So to accommodate this deteriorating problem and to stop the spread of this problem further, a necessary step requires be imposing and enforcing so the producer of the product would be more careful and aware with the changes required for the new products.

It is so disappointing, during the past years, the major group of people was not given any chance to express their dissatisfaction of the product. Anyone whom managed to buy a property is considered to be wealthy and they as the investors do not care much on the products quality. But it is not that all, the low education level with less exposure to these matters in this industry have also become an influencing factor to the deterioration of quality in the past. But at that period, less people with minimum knowledge of quality could not go further or proceed to the next level as there was also no proper channel to improve or voice it out. Everyone was made to live with it and accept the product quality as it will be surrendered to the consumer.

1.5 Objective of the Research

The goal of this study is to identify that quality deterioration at housing construction sites is affected to training.

On the other hand, this studies also to identify the other relevant factor influencing the quality deterioration in housing construction industry.

Moreover, the current study also to analyze the best and easier way to educate the site personnel.

1.6 Research Questions

1. Is the effect of training in order to produce a better quality?
2. What are the roles of management towards producing better quality products?
3. Does the management appointed managers are a contributing factor in deterioration in quality?

1.7 The Importance of the Study

This study would be a help to be a guide for construction practioners such as Developers, Contractors with others to understand and also to provide suitable and accepatabe quality for the best of the construction based consumers in Malaysia. At this current situation there is numerous factors affecting the deterioration in quality, but the most outstanding once when it happens among the practioners especially the developer whom has the contract to deliver the acceptable product to their buyers. Problems arise when the promise was not upkeep, leading to the breach of the contract and soon to legal prosiding.

As what the industry experiences in the current latest decades, the requirement and knowledge on quality products have penetrate the market and we must agree that this procedure was taken up for the benefit of the industry. So a proper and improve guide

are required to be setup so this will become a bench mark for all the new players or venturers in this industry. Besides that, this guide would also decrease the defects problems in Malaysia and prepare better observation with strict guidelines and inspections.

1.8 Operational of Definitions

1.8.1 Quality

Firstly, I would discuss on definition of quality where it is the ability to meet or exceed customer expectation while maintaining a competitive market position as stated by Juran (1974). Also as mentioned by Sutter 1996 which is “the quality is a value no different from integrity or honesty”. It is not an objectively measured attribute as much as it’s way of business. There is no acceptable level of quality – products and services either delight or they are doomed.

As per mentioned by American Society for Quality in the year 2000 technically quality could also defined as :-

- i) characteristic of product or service that bear on its ability to satisfy stated or implied needs
- ii) product or service free of deficiencies

1.8.2 Quality Deterioration

The next, I would like to discuss the definition of deterioration as stated in business dictionary which is the reduction in extent, position, quality, rating, status, or value. Usually seen as a negative, it can have positive connotations also such as in downgrading of a risk. As per what define by World English Dictionary, the deterioration means to make or become worse or lower in quality, value, character with depreciating value and wear away or disintegrate.

1.8.3 Training

The definition of training as stated by Business Dictionary would be as a organized activity aimed at imparting information and/or instructions to improve the recipient's performance or to help him/her attain a required level of knowledge or skill. Other definition on training would be. It is a learning process that involves the acquisition of knowledge, sharpening of skills, concepts, rules, or changing of attitudes and behaviours to enhance the performance of employees.

1.8.4 Construction Industry

Construction industry is also defined as work covers work on new or existing commercial, industrial or domestic buildings or structures. Other definitions are stated as

the industry that builds housing or industry that builds housing as stated in Audio English.

1.9 Conclusion

As for conclusion, the need for training in order to upgrade and improve the quality of the products is necessary. We are aware that factors influencing the deterioration in quality were numerous but this particular factor would be the ultimate decision maker in order to sustain and develop the acceptable products by the consumers.

By improvising the type of training with relevant skills and knowledge, the quality deterioration problem in construction industry could be minimized tremendously. This would cover a larger scale of construction workers with poor education background and financial problems. The suitable training can be a stepping stone to mark the improvement era in construction industry.

As a conclusion the needs of this study is very clear where the research is necessary to identify the main influencing factor for the quality deterioration in housing construction industry and to identify the way to improve with to develop necessary steps to prohibit and overcome the deterioration problems and thus increase of human awareness towards quality products in detail and for the betterment of the country in general.

REFERENCES

- Abdul Rahman, H & Berawi, M.A (2002). Power Quality System, A New System for Quality Management in Globalization - Towards Innovation and Competitive Advantages.
- Andre Nijhof, John Graafland, Oskar de Kuijer (2009). Exploration of an Agenda for Transparency in the Construction Industry.
- A.V. Feigenbaum (1983). Total Quality Control, Third Edition (New York: McGraw-Hill Book Co., 1983).
- A. V. Feigenbaum, Donald S (2003). The Power of Management Capital: Utilizing the New Drivers of Innovation, Profitability and Growth in a Demanding Global Economy, McGraw-Hills.
- Besterfield, D.H, Michna, C.B Besterfield, G.H & Sacre, M.B (2003). Total Quality Management, 3rd USA.
- Chew, Y.S & Chai, L.N (1996). ISO 9002 in Malaysian Construction Industry, London McGraw Hill.
- GS Sureshchandar, Chandrasekharan Rajendran and RN Anantahraman (2001). A Holistic Model for Total Quality Service.
- Gitlow, H.S, Oppenheim, A.J Oppenheim, R. and Levine, D.O (2005). Quality Management . 3rd ed Boston : Mc Graw Hills.
- Hamzah Abdul Rahman, Saipol Bari Abd Karim, Mohd Suhaimi Mohd Danuri, Mohammed Ali Berawi & Yap Xiang Wen (2007). Does Professional Ethic Affects Construction Quality.
- Hamzah Abdul Rahman (1996). Some Observation on the Issue of Quality Cost in Construction.
http://en.wikipedia.org/wiki/W._Edwards_Deming - Definition of quality
- Juran, JM and Gyrna, F.M (1993). Quality Planning and Analysis, Mc Graw Hill, Mew York , NY.
- Low, S.P & Omar, H.F (1997). The Effective Maintenance of Quality Management Systems in the Construction Industry, International Journal of Quality & Reliability Management, 14(8).

Low Sui Pheng and Sze Hui Hong (2005). Strategic Quality Management for the Construction Industry

NST 2004. The New Strait Times; Hospitals Reopens End of Year 5 October 2004 (<http://achives.amedia.com.my/bin/main.exe>).

NST 2004. The New Strait Times; Samy Vellu: We accept Findings from Consultant. 1 October 2004 . Available from <http://archieves.amedia.com.my/bin/main.exe>

Ofer Zwikael (2008). Critical Planning Process In Construction Project.

Parasuraman, Valerie A Zeitahmil & Leonard L Berry (2002). A conceptual model of service quality and its implication for future research.

S.Senaratne and MG Sexton (2008). Role of knowledge in managing construction project change.

Shamas-ur-Rehman Toor & Stephen Ogunluna (2009). Ineffective leadership-Investigating the negative attributes of leaders and organizational neutralizers.

The Star (2006). Boost for Construction Industry. Nation 20 July 2006. Available from: <http://achives.thestar.com.my/search>).

The Star (2006). Move to Curb Contractor Abuses, Nation 21 August 2006.

The Star (2006). Quality Remains the Elusive Factor in Housing, Business 25 September 2006 (<http://achives.thestar.com.my/search>).

Victor E. Sower, Ph.D., C.Q.E. (1999). Definition of Quality.

Vee, C, Skitmore, M. (2003). Professional Ethics in the Construction Industry, Engineering, Construction and Architectural Management.